

WHY DO BIRDS SING?

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THE concept of territory and the defense of territory in the nesting cycle of birds is of course well established. The concept itself hardly needs defense. Moreover, it need not apply exclusively to birds. It may be traced throughout some other animal groups, and perhaps has reached its most complex development in man, particularly on the interspecific basis.

Together with the development of our understanding of territory has emerged a rather well-recognized interpretation of bird song, as proclaiming, or defending, territory. This interpretation has become so well fixed in our literature that writers on specific bird studies refer to bird song as proclaiming or defending territory as a matter of course. I have heard popular writers and lecturers explain bird song to laymen in the terms of our new-found understanding of such things, carefully explaining that bird song is not an expression of happiness, but only means: "This is mine! You keep out of here! If you dare to come into my territory"

I would not attempt to argue that bird song is not involved in the bird's concept of territory. But, are we not oversimplifying this matter? We are trying to interpret actions, not simply gathering scientific facts, and we have to guess. As scientists, we are extremely timid about assigning to other animals any of the mental or psychological traits of man. One would think that the scientist is the perfect fundamentalist, carefully maintaining a wall between man and other animals.

This wall, however, is breaking down somewhat. We are finding that other animals share to a recognizable degree some characteristics of human behavior that we were unwilling to acknowledge at one time, and conversely that many behavior patterns of man have an "instinctual" basis, if we may use the term loosely here, similar to those of the other animals.

Here are two instances that come to mind to illustrate this. Some road work was going on and I had to wait for the go-ahead signal. The employee giving the signal was sitting by the road. He picked up a pebble on one side, tossed it over to the other side. Another pebble, and another, while he was gazing at the road work. Scientifically we could not assign any purpose or use in the tossing of these pebbles.

One day on the tide flats of Bering Sea I was approaching the nest of a Snowy Owl. Both parents were disturbed by my approach. They flew about, landing on the ground in various places, calling anxiously. Once the male happened to land beside the female, and hopped on her in a breeding attitude, momentarily.

In the case of the road employee and the Snowy Owl we could not assign

any conscious purpose to their actions; I would say that they were instinctual, a response to some stimulus that neither was aware of.

We must realize that the interpretation of animal action is not easy—much harder than simply recording observations. We have to use our imagination, properly. We must see our problem whole.

In 1892, in "The Grammar of Science," Karl Pearson discusses science and the imagination. He says: "There is an element in our being which is not satisfied by the formal processes of reasoning; it is the imaginative or aesthetic side, the side to which the poets and philosophers appeal, and one which science cannot, to be scientific, disregard."

We have seen that the imagination must not replace the reason in the deduction of relation and law from classified facts. But, nonetheless, disciplined imagination has been at the bottom of all great scientific discoveries.

In "Evolution: The Modern Synthesis," Huxley says:

"Undoubtedly true song has important functions, notably as territorial threat and advertisement (Huxley 1938 c). But given the complex emotional make-up of song birds, song is uttered in many circumstances where it has other functions, produced 'for its own sake.' The sedge warbler (*Acrocephalus schoenobaenus*) will sing as an expression of anger. Many birds sing as an expression of general well-being, the autumn recrudescence of song in many species would seem to be due to this and to have no function."

Why do many birds sing during specific periods in the morning or evening, or both? Does the territory require proclamation or defense by song only then? As I have listened to bird song over a period of many years, and the trilling of frogs, fiddling of insects, howling, bugling, and roaring of mammals, I have tried hard to reach an understanding of the stimulation for such efforts. I have recollections as a boy in Minnesota that bird song in the spring became much more noticeable after a light shower of rain, when the air was bracing. I have noticed in later years that when I have listened to the early morning singing of a Robin, for example, the atmosphere was such that I too felt stimulated. Evenings have an influence on the human animal, of which the individual can be very conscious if he gives attention to it. People also are stirred especially to song or whistling or similar manifestations under certain meteorological conditions. Noonday is the least inspiring time for man or any others.

In the woods about our home we have a considerable Ruffed Grouse population. Within a radius of a few hundred yards of our house six or more drum regularly in the spring. In the fall, when the languid air of summer is past and the bracing nights have come again, the grouse begin to drum again, and I have heard them as late as 5 December.

Here in the lower part of the mountains a moonlit autumn night can become highly vocal—with constant bugling of elk, singing of coyotes, and

hooting of Great Horned Owls. I would not overlook moonlight itself as a stimulant.

We know that birds will sing in migration. They will sing in flocks. At one of our camps in the Fiordlands of New Zealand, in the month of April (when winter was approaching) several bell birds remained about our tents feeding on berries of *Caprosma*, and several were singing every day. There was no hint of rivalry that we could see, no obvious question of territory.

One day, on a tramp in the native forest out from Wellington, I was discussing this with Dr. R. A. Falla, Director of New Zealand's Dominion Museum. As we were speaking a flock of small birds appeared in the trees overhead, singing. My recollection is that they were white-eyes, though I did not make written record of it. Those birds constituted a roving flock, presumably a social group with no present obsession about individual territory, and they were singing.

I believe it is a mistake to establish interpretation of specific behavior in one group without seriously considering other groups. Song is universal. We speak of the "howling" of wolves and coyotes. That is merely a human designation, which does not necessarily speak for what it means to the coyote. If we believe in evolution, we must be aware of the general trend in forms of life to get pleasure from what the physiological senses can produce. Producing sound is one of them—certain aspects of which we call music. But it had its evolutionary roots somewhere, and we are overlooking something important if we do not trace our own reactions back to other animals.

Perhaps it is well to explain what I mean by song, especially bird song. We should have in mind that we are dealing with a human term, a human concept. We human beings have begun to combine poetry with music, to put words into song, a complication which birds do not have. Often I cannot interpret the words when I hear a good human song and I have sometimes only listened to the sounds produced, the rhythms, the transitions from low to high notes. I think I have enjoyed in a fundamental way the sounds produced, their variations and relationships. It is this I have in mind when I speak of bird song, the enjoyment of a sound as an end in itself. Sometimes when I hear two Great Horned Owls hooting at night, one in a low tone, the other in a higher tone, back and forth, one after the other, for a long time, I wonder: are they saying something to each other, and what could they be repeating over and over again? Is it not more logical, more scientific, to assume that they like to hear each other's voices, to use a human term, a kind of duet?

It is true, many birds have certain calls, that may be interpreted vaguely as the forerunner of language, as we know it. But I have in mind, as song, the

sounds produced by an impulse to produce sounds, merely because they like to do it.

I have not worked with amphibians enough to speak authoritatively on their motivation, but it seems to me we should give more attention to the piping chorus of frogs in spring. And insects "sing" in the more universal sense. Do they too proclaim territory? When a grasshopper flies off in more or less aimless fashion, it will produce a *tic-tac* sort of sound. How are we to interpret that? Is it possible that such creatures have a certain pleasure in producing sound, music in human terminology?

I have listened to coyotes carefully. They will "sing" at various times throughout the year, including the winter. Captive coyotes can be stimulated to sing by a loud whistle, or by a high-pitched voice, or by the playing of a piano. Some dogs are stimulated the same way. Occasionally by giving the coyote howl in the mountains I have had a response from an unseen coyote that happened to be near. In an Alaska village one husky dog howling would set off a chorus of howling among the many dogs in the village.

The bugling of elk is popularly supposed to be a challenge to possible rivals, a form of "territorialism" in its broad sense. I do not discount the element of challenge. Certainly, in the height of the rut, the bull elk is in a challenging mood. But at the beginning of the rutting season several bulls may be seen together and bugling may take place without any overt move toward any of them. Furthermore, in the height of the rut, a lone bull may be found, obviously seeking a harem. He has none to defend. He is listening, looking, moving through the woods in the hope of finding cows, giving expression of his strong feelings by bugling at intervals.

Of course there is rivalry. Particularly in the case of a bull in possession, with consequent psychological advantage, the bugle may have an element of challenge. But as I have watched them at close range, I have been impressed with the probability that the animal is primarily giving expression to his tremendous pent-up energy, combining many psychological impulses—such as eagerness, a sense of dominance, elation over possession, challenge perhaps, and a plain urge to give voice to his feelings.

The lone bull would not have the elation of possession, or sense of dominance, yet he bugles vigorously. In his case, if we grant these multiple impulses—their individual values must be different, and probably his dominant urges are an intense eagerness and sexual hunger.

Furthermore, I have seen and heard cow elk bugling in the spring, a lesser version of the loud bull bugle. This was at the near approach of the fawning season. Does some form of the sexual complex have something to do with bugling?

Mammals probably have somewhat greater facility of expression than birds.

But I have had the same impressions from bird song. I cannot help feeling that the bird is responsive to climatic influences—perhaps temperature, relative humidity, degree and kind of light—as well as the excitement of the sexual urge, elation of possession or hunger for possession, and probably a degree of defiance. If we grant the psychological turmoil of the breeding season, we must grant a more complex origin of song than the simple proclaiming of territory. Perhaps many would interpret the autumn drumming of the Ruffed Grouse as simply a wistful recollection of spring territory. But I believe we are overlooking important elements if we neglect to give attention to the stimuli of autumn as well.

In a number of recent ornithological articles the authors have found it necessary to allocate some bird song types to other motives than territory. In much of the literature too there are recorded numerous observations that are suggestive. When I first thought of presenting my views on this subject I had planned to document my remarks fully from the literature, but that would be voluminous. My purpose here, then, is merely to make suggestions, largely to suggest a new approach.

I would urge the validity of drawing upon human experience in the interpretation of bird song. This sentence by itself can be shocking to the scientist and misleading. What I mean is this. Science should recognize the common origin of animal life. Science does recognize some reactions of man and other animals as similar. To be more specific, it appears silly to deny to other animals a sense of well-being, of satisfaction, enthusiasm—many of the fundamental reactions that we all share. Of course we must be extremely cautious in imputing to other animals the more specialized reactions of man, especially those resulting from his cultural experience. To say that a bird sings “in praise of his maker” may be logically assailed by the scientist, since it is a concept out of man’s formalized organization of thought. But to say that a bird sings because it is happy may not be incorrect, if we will consent to use terms out of the vernacular, with their fundamental meanings. One difficulty is that we have observed so much anthropomorphic thinking on such matters that we have created an abhorrence of everyday language, and lean over too far backward so as not to be contaminated.

To pursue this a little further, we know that somewhere in the universe has arisen the fact of esthetics. This is a broad, very inclusive term. Many writers have done their best to define art, beauty, esthetics. At any rate we have a general notion of what it all is. It would be conceded that we receive our esthetic expressions through several of our senses. In our well-organized field of art we recognize music, painting, drawing, dancing. To some extent we might include taste.

Perhaps we should not consider it merely accidental that birds also react

to stimuli of vision (certain colorful and elaborate display) and to hearing. And we would have to include other major animal groups. W. Craig in "The Song of the Wood Pewee *Myiochanes virens* Linnaeus: a study of bird music" (*New York State Mus. Bull.* 334), made a notable study of the Wood Pewee and reports that this simple song reveals musical principle as we know it. We are not the only organisms which dance. When a Raven goes through his aerial evolutions I cannot believe that he does not enjoy the gliding sensations. I have seen a Golden Eagle mount steeply, dive, mount again, in several waves, one after another. The New Zealand Pigeon has a beautiful gliding dip and up-swoop that must give a definite satisfaction to the bird.

My thesis is that through our sensory apparatus we are in contact with the universe. We, as human beings, have learned to organize our impressions into various patterns, consciously, and more recently with inventive purpose. It would be unrealistic, and illogical, to assume that other animals do not derive somewhat similar satisfactions from their apparently deliberate experimentation in feeling out their environment. We are all apparently in the same life pattern—some more specialized in various directions—but with the same fundamental responses.

I suspect that bird song has a much deeper significance than advertising alone. I believe we are overlooking possibilities, and retarding the progress of science. if we close our minds and fail to see the picture whole, if we shrink from the task of probing the more intangible concepts that may be in bird song.

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